



Program and Abstract Book

29. International Workshop on Single Molecule Spectroscopy and Super-resolution Microscopy

**Berlin, Germany
October 8 - 10, 2024**



www.single-molecules.org

PICOQUANT

Tuesday, October 8

12.30 - 13.30 REGISTRATION

13.30 - 13.45 **Rainer Erdmann, Berlin, Germany**
Opening Remarks

Session: FLIM

Chair: Quan Wang

13.45 - 14.15 **Lars Hubatsch, Dresden, Germany (Invited Talk)**
Capturing Molecular Transport across Phase Boundaries by Fluorescence Microscopy

14.15 - 14.35 **Gabriel Moya, Munich, Germany (Student Award)**
Single-molecule spectroscopy & super-resolution microscopy at the biochemistry lab bench.

14.35 - 14.55 **Chenyuan Yan, München, Germany (Student Award)**
Exploring the Interactions between DNA and Graphene via Graphene Energy Transfer (GET)

14.55 - 15.15 **Sigrid Milles, Berlin, Germany**
Intrinsically disordered regulators of endocytosis - an integrated NMR/single molecule fluorescence approach

15.15 - 15.50 COFFEE BREAK & EXHIBITION

Session: FRET I

Chair: Lars Hubatsch

15.50 - 16.20 **Quan Wang, Bethesda, United States (Invited Talk)**
High-precision single-molecule spectroscopy and charge sensing with an anti-Brownian trap

16.20 - 16.40 **Thorben Cordes, Dortmund, Germany**
Dissecting Mechanisms of Ligand Binding and Conformational Changes in Substrate Binding Proteins

16.40 - 17.00 **Kseniia Volkova, Berlin, Germany (Student Award)**
Confocal microscopy in a controlled atmosphere for nano-scale nuclear magnetic resonance spectroscopy

17.00 - 17.20 **Noah Salama, Düsseldorf, Germany (Student Award)**
Performing and Analyzing FRET Nanoscopy Measurements on DNA-Origami Platforms with sub-Nanometer Precision

17.20 - 18.50 POSTER SESSION 1 & GET TOGETHER

Wednesday, October 9

Session: F-Techniques

Chair: Susana Rocha

- 09.00 - 09.35 **Stefanie Weidtkamp-Peters, Duesseldorf, Germany (Invited Talk)**
Studying interaction in biological samples by applying spectroscopic methods
- 09.35 - 09.55 **Or Eivgi, Heidelberg, Germany**
Subtle Polymer Dynamics Revealed by Fluorescence Lifetime Imaging Microscopy
- 09.55 - 10.15 **Koushik Sreenivasa, Delft, Netherlands (Student Award)**
Measuring the sequence dependence of DNA looping at high-throughput using single-molecule FRET
- 10.15 - 10.35 **Abhilash Kulkarni, Stockholm, Sweden (Student Award)**
Multiplexed NIR FCCS using a single superconducting nanowire single photon detector
- 10.35 - 10.45 GROUP PICTURE
- 10.45 - 11.20 COFFEE BREAK & EXHIBITION

Session: Super resolution microscopy I

Chair: Stefanie Weidtkamp-Peters

- 11.20 - 11.50 **Sergio Padilla-Parra, London, United Kingdom (Invited Talk)**
Visualizing the coupling between Gag proteolysis and Env clustering in native HIV-1 viruses
- 11.50 - 12.10 **Christian Eggeling, Jena, Germany**
Pitfalls and workarounds of photobleaching effects in advanced fluorescence microscopy
- 12.10 - 12.30 **Tao Chen, Göttingen, Germany**
Super-resolved axial imaging of piconewton cellular traction forces with metal-induced energy transfer spectroscopy/imaging
- 12.30 - 12.50 **Dominic A. Helmerich, Würzburg, Germany**
Beyond Resolution Limits: Sub-10nm Insights via Photoswitching Fingerprint analysis
- 12.50 - 13.10 **Roman Tsukanov, Göttingen, Germany**
A versatile microfluidics platform for enhanced multi-target super-resolution microscope
- 13.10 - 14.40 LUNCH BREAK

- 14.40 - 15.10 **Susana Rocha**, *Leuven, Belgium (Invited Talk)*
Imaging Cellular Forces: From Micro to the Nano Scale
- 15.10 - 15.30 **Moritz Burmeister**, *Aarhus, Denmark (Student Award)*
Extracting Rate Constants Using Single Molecule Localization Microscopy
- 15.30 - 15.50 **Samrat Basak**, *Göttingen, Germany*
Three-dimensional multi-target super-resolution microscopy of cells using
Metal-Induced Energy Transfer and DNA-PAINT
- 15.50 - 16.10 **Asima Nayak**, *Berlin, Germany (Student Award)*
Characterization of Lewy Body-like Structures in Cellular System and Patient
Samples
- 16.10 - 16.20 VOTING STUDENT AWARD
- 16.20 - 16.55 COFFEE BREAK & EXHIBITION
- 16.55 - 18.10 POSTER SESSION II
- 18.30 - ... WORKSHOP DINNER

Thursday, October 10

Session: FRET II

Chair: Suzanne Blum

- 09.00 - 09.35 **Emmanuel Margeat**, Montpellier, France (*Invited Talk*)
Dissecting the structural dynamics of a GPCR using smFRET
- 09.35 - 09.55 **Nicola Galvanetto**, Zurich, Switzerland
Observing protein dynamics in biomolecular condensates with single-molecule spectroscopy
- 09.55 - 10.15 **Daniel Nettels**, Zürich, Switzerland
Disordered linkers enable complex motion of two-domain proteins on double-stranded RNA
- 10.15 - 10.35 **Rana Mhanna**, Saarbrücken, Germany
Unexpected effect of excitation wavelength in single-molecule photochemistry of terrylene
- 10.35 - 10.45 STUDENT AWARD PRESENTATION
- 10.45 - 11.20 COFFEE BREAK & EXHIBITION

Session: Biological applications

Chair: Anindya Datta

- 11.20 - 11.50 **Suzanne A. Blum**, Irvine, United States (*Invited Talk*)
Chemical Reaction Insights through FLIM
- 11.50 - 12.10 **Melissa Birol**, Berlin, Germany
Early deviations in cell-to-cell communication in neurodegenerative disease trajectories
- 12.10 - 12.30 **Johannes Broichhagen**, Berlin, Germany
Heavier fluorophores with boosted brightness, lifetime and stability
- 12.30 - 12.50 **Michael Börsch**, Jena, Germany
Beyond smFRET - NV qubit in nanodiamond for monitoring subunit rotation in single FoF1-ATP synthase
- 12.50 - 14.20 LUNCH BREAK

- 14.20 - 14.50 **Anindya Datta**, *Mumbai, India (Invited Talk)*
Elucidation of exciton dynamics in semiconductor nanocrystals using
Fluorescence Lifetime Correlation Spectroscopy
- 14.50 - 15.10 **Tanuja Kistwal**, *Bochum, Germany*
Fluorescence correlation spectroscopy of Single wall carbon nanotubes
- 15.10 - 15.30 **Sebastian Kruss**, *Bochum, Germany*
Near infrared fluorescent nanosensors for biomedical imaging
- 15.30 - 15.50 **Tjaart Krüger**, *Pretoria, South Africa*
Comparison of real-time feedback-driven single-particle tracking techniques
- 15.50 - 16.00 Concluding Remarks
- 16.00 End of 29th International Workshop on Single Molecule Spectroscopy and
Super-resolution Microscopy